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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/068,745	02/05/2002	Joel R. Goergen	3981-34	9219

7590 09/23/2004  
James E. Harris  
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EXAMINER

NGUYEN, DONGHAI D

ART UNIT	PAPER NUMBER
3729	

DATE MAILED: 09/23/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

<p align="center"><b>Office Action Summary</b></p>	<b>Application No.</b> 10/068,745	<b>Applicant(s)</b> GOERGEN, JOEL R.	
	<b>Examiner</b> Donghai D. Nguyen	<b>Art Unit</b> 3729	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
  - If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
  - If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
  - Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 25 June 2004.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-12 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-3 is/are rejected.
- 7) ☒ Claim(s) 4-12 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>5/22/04 &amp; 6/14/04</u> | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### *Response to Amendment*

1. The proposed reply filed on June 25, 2004 has been entered as record.

### *Claim Rejections - 35 USC § 103*

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-3 are rejected under 35 U.S.C. 103(a) as being unpatentable over Anstrom et al in view of Blake et al.

Regarding claim 1, Anstrom et al disclose a method of fabricating a multi-layer circuit board (70), the method comprising: creating a first layer arrangement (71-73) comprising a plurality of high-speed differential trace layers (62) and a plurality of reference plane layers (64/66) stacked in an interleaved fashion, each high-speed differential trace layer separated from each adjacent reference plane layer by a layer of a first dielectric material (67/68, top half of Fig. 7); creating a second layer (74) arrangement comprising at least two patterned power plane layers (52/55/59), stacked between layers of a second dielectric material (152) having better void-filling capability, during lamination under similar conditions, than the first dielectric material (Fig. 5); laminating the first and second layer arrangements together such that the first and second layer arrangements interface across a reference plane layer (Figs. 7 and 8); and forming a large plurality of plated thru-holes (102, 105) distributed throughout the circuit board,

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the plated thru-holes electrically connecting the reference plane layers (top and bottom reference plane layer in Figs. 8-9), while leaving the power plane layers electrically isolated from each other and from the reference plane layers, within the circuit board.

Anstrom et al do not disclose the power plane having a thickness at least equivalent to the thickness of three-ounces-per-square-foot copper; however, Blake et al teach that the thickness of the power plane is at least equivalent to the thickness of three-ounces-per-square-foot copper for providing lower power drop across power plane (Col. 8, lines 48-51). It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Anstrom et al power plane to have the thickness of three-ounces-per-square-foot copper as taught by Blake et al for providing lower power drop across power plane.

Regarding claims 2 and 3, Anstrom et al disclose creating a third layer arrangement (75-77) and the second layer arrangement is substantially at the middle of the multi-layer circuit board (see Fig. 7).

#### ***Allowable Subject Matter***

4. Claims 4-12 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

#### ***Response to Arguments***

5. Applicant's arguments filed June 25, 2004 have been fully considered but they are not persuasive.

Applicant argues that Anstrom does not disclose the two different dielectrics, one with better void-filling capability. The Examiner disagrees. First, the mere recitation of "having better void-filling capability" (Claim 1, line 9) does not positively define the dielectric material compositions and therefor it is reasonable to consider Anstrom's dielectric material to have the same capability. Secondly, Anstrom discloses in Figs. 8-9 two different types of dielectric material (80-85 and 132, 122, doted layer). Since they are different types of dielectric material they must have different properties, "void-filling capability".

Applicant argues that neither Anstrom nor Blake discloses the use of high-speed trace layers or the uses of differential trace layer. The Examiner respectfully disagrees since Anstrom discloses the first layer arrangement having trace layer and Blake's trace layers make from the same material as of Applicant's, therefore it is capable of performing as a high-speed differential trace layers of Applicant's.

In response to the applicant argument that Anstrom does not disclose the use of a reference plane, the Examiner shown that Anstrom do disclose reference planes (64, 66, top and bottom reference plane layer in Figs. 8-9) that connected by the through hole (140)

In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., "the first and second ... **resulting a construction in which the two dielectrics in remain substantially separate**" in page 2 of the remark, Par. 2, lines 6-9; "plated through holes connecting **each** reference layer" in page 2 of the remark, Par. 3, line 5; and "the interfacing of **two different dielectrics** across a reference plane" in page 2 of the remark, Par. 4, lines 3-4) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations

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from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

### ***Conclusion***

6. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Donghai D. Nguyen whose telephone number is (703) 305-7859. The examiner can normally be reached on Monday-Friday (9:00-6:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Peter D. Vo can be reached on (703) 308-1789. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

DN

A handwritten signature in black ink, appearing to read 'PETER VO', with a long horizontal stroke extending to the right.

PETER VO  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 3700